

2019 NOAA/AOML/HRD Hurricane Field Program - IFEX

GENESIS STAGE EXPERIMENT *Science Goals & Observational Applications*

Precipitation Mode (PMode) Experiment: Jon Zawislak (Co-PI), Ghassan Alaka (Co-PI), and Paul Reasor (Co-PI)

Goal: To investigate the precipitation modes (e.g., stratiform or convective precipitation) that are prevalent during the genesis stage, the evolution of key characteristics (e.g., areal coverage and intensity of precipitation), and the response of the potentially developing vortex to the observed precipitation organization [*IFEX Goal 3*]. *In 2019, this experiment has the potential to also be flown collaboratively with the National Science Foundation supported Organization of Tropical East Pacific Convection (OTREC) Experiment.* See the 2019 HRD HFP web page for additional details: <http://www.aoml.noaa.gov/hrd/HFP2019/index.html>

Observational Applications: Observations within this science goal have the potential to improve operational forecasts of tropical cyclone formation by identifying tendencies in precipitation characteristics in developing and non-developing storms. These tendencies can be quantified and incorporated into statistical genesis probabilities issued by the National Hurricane Center. Further impact on genesis forecasts can be made through model evaluation efforts, which have been historically lacking due to the sparse record of in-situ measurements of developing storms [*IFEX Goal 1*]. This particular goal will require using (precipitation) tail Doppler radar data to identify whether precipitation biases exist within Hurricane Weather Research and Forecast (HWRF) model forecasts of potentially developing storms, which could subsequently feed back on the modeled (forecasted) vortex evolution.